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(*Frontispiece.*) EARLY BLACK CRANBERRY.

CAPE COD CRANBERRIES.

BY
JAMES WEBB.

ILLUSTRATED.

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PREFACE.

Having had many years practical experience as a grower of cranberries, and being familiar with the various difficulties which beset the path of those unskilled in their culture, I have been induced, at the instance of friends, to publish this book, containing the results of my experience, in the hope that it will serve as a guide to prevent others from falling into such pit-falls and errors as have many times in the past caused discouragement and failure.

While I do not profess to know all that there is to be known on this subject, I am fully convinced that a suggestion of a practical man will prove of some benefit to those who undertake cranberry growing without previous knowledge or experience. Nor do I think it will prove entirely without avail to some who may previously have tried cranberry culture.

Undoubtedly both labor and money may be saved by the acceptance of timely hints, thrown out for the benefit of those most deeply concerned; for it is a certainty that, under proper conditions, and in those sections of the country best adapted to their culture, cranberries can be successfully raised, and with as profitable results as can be obtained from any pursuit in which the husbandman can engage.

In this belief, and with this end in view, I have en-

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deavored to set forth such information as I possess in as simple and lucid a form as possible, so that none can fail to understand the subject of which I treat, nor the descriptions which I give of the locations to be sought, and the proper methods to be applied, to make the culture of cranberries successful in the highest degree. And now, without further introduction, I refer the reader to the contents of the book for such information as they may require.

JAMES WEBB.

Cotuit, Mass., March 1, 1886.

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CAPE COD CRANBERRIES.

CHAPTER I.

HOW TO SELECT A BOG.

The bog should be in a location well protected from frost, with a bottom of peat, mud, or moss. Cranberries will grow equally well on either foundation. There should be sufficient inclination to the bog to afford fall enough to allow the water to be drained off to eighteen inches below the surface. If there is not a brook running through the bog, there should be a spring, or a pond, above it, capable of affording a sufficient supply of water to flow it readily. If there is water enough to cover the vines completely, it is all that is needed. The bog, after it is three years old, ought to be flowed from the first of November until the first of June, as it is then thoroughly vined, and a crop may be expected. There should be a sufficient supply of coarse sand, suitable for covering it, near the bog.

In selecting a bog, I prefer a huckleberry, maple, or cedar swamp, to a fresh meadow, for the reason that it costs less to take care of it after it is planted. Less grass and fewer weeds will grow in a swamp after it is first cleared, than in a meadow. The swamp on which nothing but wood has grown, has the best bottom; it is en-

riched by the decayed leaves, etc., of years, and no nutriment has ever been taken from it by other vegetation.

No trees should be allowed to grow near enough to the bog to shade it. Wherever they do, there will be a rank growth of cranberry vines, and very little fruit. Indeed, it often happens that vines will not produce at all under such conditions; and yet will present the handsomest appearance of any part of the bog. Pickers object to picking where there is too much growth of vines, as these tear their hands, the work of picking is harder, and the result of the day's work is less profitable.

Notwithstanding the fact that the most successful bogs, as a rule, are those located where they can be readily flowed, and thus protected from the ravages of insects and injury by frost, yet there are some notable exceptions to the rule. There are dry bogs under cultivation on Cape Cod, comprising hundreds of acres, that have produced well for years, escaping both frost and Fire-worm.

CHAPTER II.

CLEARING AND TURFING.

In clearing a bog, we first mow off all the bushes and low undergrowth. Next, we cut the principal roots of the large trees, and the wind will generally blow them over. The ground being soft, they will pull up a great mass of roots in their fall. This is the cheapest and best way of getting rid of the trees. If the trunks were cut off above ground, it would take many days' labor to dig out and chop off the roots, so as to allow the stumps to be removed. In the simple way here suggested, we get rid of stump and all by one operation. In case the wind

does not prove sufficient to bring down the trees, we pull them down by means of a tackle. The trunks are sawed up into logs for box-boards, or cut up into cord wood, or given away, as the case may be—all depending upon the size and quality of the timber, and the proximity to market.

The refuse tops and brush are piled up in heaps and burned on the bog, as soon as they are dry enough. It may require six weeks, more or less, according to the weather, for these to dry. When in proper condition, the fire is started as soon after a rain as possible, in order to avoid any danger of setting fire to the woods or bog. Whenever a fire occurs, it makes bad work, as the peat and moss, of which the bog is mainly composed, will take fire readily, and it is hard to extinguish it when once under way. This gives us another reason why, in selecting a bog, it is especially desirable that one with a good flow of water from a running stream should be chosen. In case of fire, by closing the gate, the water can be conducted through the ditches until they are filled, and the surface of the bog covered and the fire, however obdurate, will have to yield to its master. It was only in the past season that vast tracts of the most desirable of the New Jersey bogs were ruined from this cause—fires having spread among them, and there being no adequate supply of water, immense damage was done, which it will take years to repair.

One can not be too particular in eradicating the roots of maple trees and huckleberry bushes. They sprout and grow rapidly, and if not thoroughly cleared out, give more trouble than all other trees and shrubs combined.

The surface of the bog, after the trees and underbrush have been disposed of, is next cut into segments of about eighteen inches square, by means of an implement called a "Turfing Axe," made especially for this purpose. Turfing axes, which were formerly made to order only, can

now be obtained at any good hardware store in Boston. They consist of a thin, steel blade, hatchet-shaped, and about six inches square. This blade is made fast to a stout hickory handle, some two feet and a half long, in

Fig. 1.—TURFING AXE.

the same manner as a common wood axe. In expert hands, this axe does wonderful execution upon the tough, interlacing roots, with which the surface of the bog is filled. The method of cutting the turf is this: One man cuts across the bog, from side to side in parallel lines, a foot and a half apart, and cuts across between the lines at like distances. Two men, with three or four-pronged, iron-toothed rakes, catch hold of the turf, as the cutter goes along, and pull it over after him. After being cut into these squares, it is desirable that the turf should be turned over very regularly, because the more evenly it is

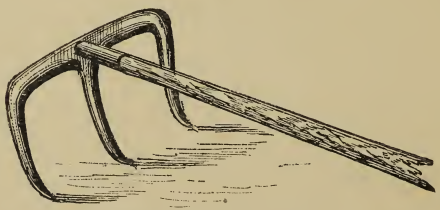


Fig. 2.—HAULING RAKE.

turned over, the easier will be the work of grading. Hence, the haulers, or men plying the rakes, should be faithful and reliable, giving attention to their duty, and doing it thoroughly and well. No overseer who understands his business will allow this part of the work to be

slighted. The rakes are much the same as those used in hauling out muck, and may be found at the hardware stores.

CHAPTER III.

DITCHING AND DRAINING.

There should be a main ditch, about four feet wide, as near the centre of the bog as possible. When the bog is excessively wet, other ditches should be run at distances of five rods apart. When it is comparatively dry, and there are not many springs, the ditches may be from eight to ten rods apart.

Wherever we find a spring, we usually make a ditch leading from it into the main ditch. It is a mistake to undertake to fill in a spring. It is sure to burst forth, and cause more trouble than if it had been provided for in the first place.

There should be a marginal ditch, running completely around the bog, about three feet wide at the top, eighteen inches deep, and eighteen inches wide at the bottom. All the ditches must be dug with slanting banks, to prevent the sides from caving.

From the marginal ditch, the other ditches are all made to pitch toward the main or central ditch. It is usually the case, in working a bog, that more or less springs are struck, and the only way to get rid of the water is by running it off through the ditches. All the side or intersecting ditches should be of the dimensions just given for the marginal ditch, which I consider a good proportion for a ditch, and all that is ordinarily required.

It will not be found necessary to clear the ditches often.

Sometimes, if the bog is of good, firm material, they will not need it for ten years. But, if the bog is soft and porous, the ditches must be cleared yearly, for several years, until the bog becomes dry and firm. But when we find a firm bog, in the first place, there will be in it but few, if any, springs.

A bog well-ditched and well-drained, is less expensive to take care of than one which is very wet; for less weeds and wild stuff will spring up in it.

CHAPTER IV.

GRADING AND LEVELLING.

A bog should be graded and made as smooth and level as possible—in fact, as near a "water level" as it can be made—because if it is of a good, even grade, it will take less water to flood it, and if the supply of water is limited, it is of course essential that this particular should be closely attended to. On the other hand, if the supply of water is abundant, so much care need not be exercised in this particular. If, for instance, a pond adjoins, or a river runs through the bog, it will be readily seen that it will answer all purposes to make the bog of its natural grade.

If there is a great deal of brake or other kinds of fern, or other wild stuff, which is hard to kill, and the bog is high enough to stand it, having a fall of from three to six feet, then it will be well to turf the whole of it, and have the top removed to the most convenient place, and burn it on the spot, or deposit it upon the nearest adjoining ground. This course will save a great deal of labor and extra expense in weeding. The advantage of this course being apparent, the additional first cost will never

be regretted. In case a fire were to break out in a bog from the burning of the bushes, or the turf, then it would be ruined were there not a supply of water that can be readily forced upon it.

The grading should be as nicely done as if laying down a lawn or pleasure ground to grass, the object being to get an even coat of sand over the whole of the surface of the peat or muck. If numerous holes and hollows are left here and there over the surface, then there would be places, in levelling up with sand, where the coating would be six or seven inches thick, instead of three or four inches, the desired thickness. The consequence would be that the vines would make a very un-

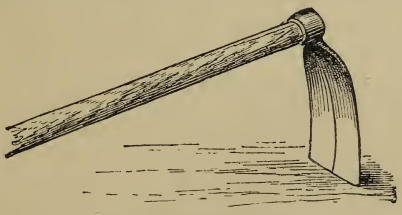


Fig. 3.—GRADING HOE.

even growth ; those which were set where the sand was the deepest, would be a year or two longer in making a growth through such a coating, than would those planted where they could readily strike their roots down into the rich muck beneath.

A hoe, shaped like a common grubbing hoe, is the implement used for grading. Every farmer knows what that is ; but the grading hoe should be made of the best steel, and ground to an edge like an axe—the object being to cut all the fine roots to pieces, and get out such of them as escaped when the trees, stumps, shoots, and larger wood were removed. These axes, or hoes, are made by hand at Cape Cod, and can be procured of hardware dealers at West Sandwich and Harwich.

CHAPTER V.

SANDING AND PLANTING.

The sand should be of a gravelly nature, free from clay or loam, and considerably coarser than that commonly used in making mortar for plastering. Sand of this description can not always be obtained ; but, whether finer or coarser, nothing which has an admixture of loam or clay, should ever be used upon a bog, for the following reasons : It will bake down hard, and the vines will not grow so vigorously as they will in loose, porous sand. Again, the water will not leach through very readily ; and weeds and wild grasses will grow much quicker than where the surface allows the water to pass through it quickly.

After the bog has been levelled, as described in the last chapter, an even coat of sand, four inches in depth,

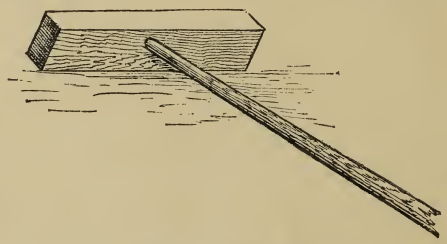


Fig. 4.—SPREADER.

should be spread over its whole surface. It is a great advantage to have the sand in close proximity to the bog, as it saves the expense of carting. In spreading the sand it is usual to lay down some two-inch plank, eight inches wide, for a walk, and the sand is brought on in wheel-barrows. The planks are laid from the sand pit or outer edge of the bog to the centre ditch, and removed as fast as the bog is sanded.

The sand is spread by means of a "Spreader," made of

a piece of one-inch white oak board, about fifteen inches long by three inches wide, and fastened to a handle.

MARKING.

When the operation of spreading the sand is completed, we next make use of an implement called the "Marker." This (fig. 5) is made of a piece of two by four inch joist, about nine feet long, having teeth set eighteen inches apart, and a handle the length of a rake-handle. The teeth are eight inches long, made of white oak, driven through holes bored in the joist for the purpose. The implement is made similar to the common rake, with

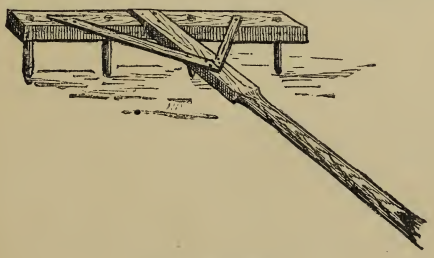


Fig. 5.—MARKER.

teeth farther apart, and the whole made stronger to stand harder usage, by having stays running from the handle to the head, which holds the teeth.

To mark off the bog, a line is stretched, say six inches from the margin of any one of the intersecting ditches, as a starting point, and run the marker lengthwise of that line, and continue to mark to within six inches, or the same distance of the next intersecting ditch, and so continue back and forth between the shore and central ditch until that particular section has been gone over; we then proceed to the next section and mark it in the same manner, and so on in rotation, until all have been marked in the same way. We then draw the marker transversely across the sections, that is to say, at right

angles with the first marking. The sections, when the marking is completed, have much the appearance of a checker-board. All this is done preparatory to planting the vines.

THE CUTTINGS.

The bog is to be planted with cuttings, usually called "uprights." They are the shoots of the running, or main stems of established vines, from two to four inches long, which bear the fruit. Sometimes long cuttings, some two feet in length, are used, being doubled at the time of planting.

MAKING THE CUTTINGS.

The uprights are mowed off of an established bog, using a butchering knife. They are cut off smooth from the runners and rolled back in windrows, as one would roll back a fleece in shearing a sheep. The dead wood is rejected, and only the fresh clean cuttings are used for planting or are barrelled for transportation. The average quantity of uprights required for planting an acre is four barrels, but with older cuttings it would take more, as with age the vines become larger and heavier. When a vine is eight or ten years old, its stem is about the size of a lead pencil, but when younger it is about the size of the lead or point of the pencil.

KEEPING THE CUTTINGS.

After making the cuttings, they should not be exposed to the sun for any length of time before planting, but should be kept in the shade and under water, in a pond or running stream, where there will be fresh water flowing over them all the time. They should not be put into stagnant water, for in that case they would "cook," or spoil. In the manner above described, the vines could be kept all

summer, or the year round, until the following spring. I have known them to be kept from one season to another in a cellar, and when planted the bulk of them lived.

THE SETTING STICK.

Planting is done with the aid of an implement called the "setting stick." This is made of white oak, about eight inches long, with a rounded and bulbous-shaped handle, and a blade about a fourth of an inch thick, as

Fig. 6.—SETTING STICK.

shown in fig. 6. If it were made of softer wood, two hours work would blunt the edge and make it comparatively useless.

SETTING THE CUTTINGS.

The little bunch of cuttings, or "uprights," is placed upon the sand, the blade of the "setting stick" pressed upon them, and with a single thrust of the hand the hole is made, and the "uprights" set or planted at a suitable depth and in proper position; that is, through the covering of sand, and in contact with the muck beneath. In this case, the vines being alive when planted, not one in five hundred will be lost. The cuttings, when set, should not project above the surface more than from one to two inches. When the long runner, doubled, is used instead of the little bunch of vines, if two feet long the runner is doubled twice, and then is planted with the setting stick precisely as uprights, in the manner already described. The diagram (fig. 7) of a portion of a bog illustrates the

manner in which the cuttings are set, at the corners of the squares formed in marking. About four uprights in a bunch are set in each corner. If more are planted they are apt to heat, and not take root at all.

TREATMENT AFTER PLANTING.

After the vines are planted, the bog should be kept moderately wet for two or three weeks by shutting down the dam, and keeping the water back in the ditches to within eight inches of the surface of the bog, until the

Fig. 7.—DIAGRAM OF PLANTING.

vines show some signs of growing. After they have started, the dam should be raised and the water let out of the ditches, so as to warm the ground, and let the vines receive the full benefit of the rays of the sun, when they will grow with great vigor.

If during the summer there should be a dry time, then the water should be occasionally raised in the ditches. But, if we have a very wet season, the water should be kept low, and the bog as dry as possible.

CHAPTER VI.

DIKING AND FLOWING.

The construction of a dike is a matter of judgment to a great extent. The hight of the dam will depend on the pitch of the bog; for the dam must be of sufficient hight to raise the water so as to flow the whole surface.

Preparatory to making a dam, we dig a trench directly through the bog at the spot where the dam is to be placed—about four feet in width, and down to the hard-pan, if the muck is not too deep. A location where a solid foundation for the dam can be reached is desirable. The trench should be filled in with sand or clay; level with the surface of the surrounding bog, and the surface of the bog should be turfed to a distance of four or five feet on each side of the trench, and all stumps and roots taken out, so as to make a good foundation for the dam to rest upon.

The foundation of the dam should be not less than twelve feet wide from outside to outside, in case the surface to be flowed is of any great extent—say fifty acres. The sods or turf, which have been removed from the bog in the manner already described, should be used to make the outside of the dam. They should be laid flat, one upon the other, and after every layer add sand of sufficient depth to fill up all crevices, and to cover over each layer of sods thoroughly and evenly. The joints should be broken in laying the sods, and the whole work should be very carefully done. Two walls of turf are thus built, and the space between them should be filled in with sand or clay, and the dam should be raised to a hight sufficient to flow the bog. It would be well in making the outside of the dam, to lay the sods so that they will take root in the spring, and grow and hold the whole structure firmly together. It is better to make

the dam in the spring than in the fall, for this reason. The walls, or sides of the dam should gradually taper from the foundation to the top, so that, starting with a width of twelve feet at the bottom, it will be nine feet wide at the top, and will be suitable for a driveway in

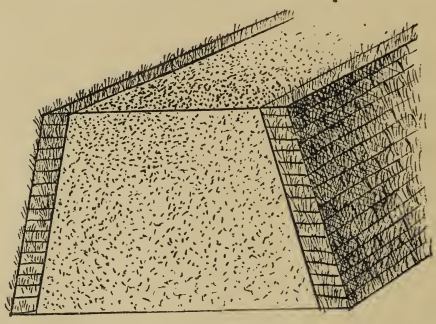


Fig. 8.—SECTION OF DAM.

crossing the bog. Figure 8, showing a section of the dam, will give an idea of this method of structure.

THE FLUME.

The flume should be constructed and set as near the center of the dam as convenient. In case the bog is supplied with water from a flowing stream or river, the flume will of course be placed in the bed of that stream or river. Having set the flume, the dam is built up to it. The flume is constructed as follows: The frame is made of cedar or cypress timber, about eight inches square, and the stuff for planking is of two-inch cypress or pine. For a dam of twelve feet foundation, the flume would require a frame of corresponding length and width. The frame is made for the bottom and sides as shown in figure 9, and the planking is spiked to this frame on the inside; previous to which, however, piles of matched spruce boards are driven the whole width of the flume across the center. These piles are of one-inch boards, and are

driven down from eighteen inches to three or four feet deep, or until they came to a solid bottom. They are then nailed to the frame, and sawed off level with it, so that the planking which forms the bottom of the flume can be nailed smoothly over them. This is done to prevent any animal from burrowing under the flume, and letting the water off when the bog is flowed. These piles are also driven laterally for a distance of ten or twelve feet each side of the center, and also at the upper and lower ends of the flume, and nailed to the frame work in the same way, and are of use in holding the flume down

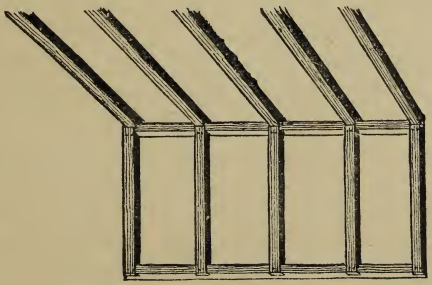


Fig. 9.—SIDE FRAME OF FLUME.

in its place. If this work is not thoroughly well done, if the flume is not properly constructed, and the piling carefully attended to, musk rats or eels will be sure to go through, the dam will be undermined and the water possibly let off in the winter, when the bog should be covered; for, unless leaks are prevented, the vines may be exposed to the weather in the winter, which would damage them seriously, and entail the loss of a crop the following year.

It is best to engage a man who is well acquainted with work of this kind. Any one who has ever set a flume at a mill would understand it. But I have known instances where, owing to haste and carelessness in building the flume, both dam and flume have been carried away in the

winter, and great damage was occasioned thereby. When such a catastrophe occurs, the vines are washed out, and all the material used in building the dam is carried down with the water and scattered broadcast over the bog. We often make two or three grades to a bog, where the pitch is six feet or more, and the resulting injury would be great and the loss serious were such a break to occur.

In flowing a bog, all that is required is a sufficient depth of water to cover the vines. The proper time to commence flowing is about the first of November, before any ice forms ; although, if by any chance the vines have become frozen in the ice, that of itself will not destroy them. It is subsequent flowing which lifts the ice, which as it rises, tears out the vines. This causes the harm, and the way to avoid it is by adjusting the gate to the flume so as to let off all surplus water.

The gate of a flume is constructed as follows : Two parallel strips of wood, one inch and a half thick are nailed perpendiculary near the center of each side of the flume an inch or more apart, and opposite each other, as seen in figure 10. The gate, constructed of matched inch boards, slides up and down between these strips or grooves of wood, as is shown in at *A* and *B*, figure 10, by means of a chain and roller. This is one way of constructing the gate and it is the common one on the Cape.

If water for flowing is obtained from a stream which flows through the bog, but one dam with its flume and gate is often all that is required. If a pond or reservoir, on higher ground supplies the water for flowing, then, besides this dam, there must be another as the source of supply, by opening the gate in which the water for flowing will be let on.

For the first two seasons the water should be kept on the bog until the last of April ; but when the bog is two years old, and in condition to bear, water should be kept on later, say until the first of June. If any one wishes

to experiment with later flowing he can do so. I have kept the water on until the fifteenth day of June, and have had a good, well-ripened crop.

The object in keeping the water on until June, after the bog is vined and ready to bear, is to prevent damage from late frosts, and get rid of the Fruit-worm and the Fire-worm; next to the frost, these two pests are the worst foes of the cranberry. The particular bog above alluded to, which was flowed until the fifteenth day of

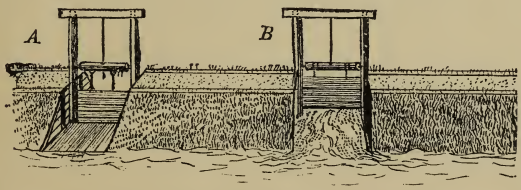


Fig. 10.—DAM, SHOWING GATE SHUT AND GATE OPEN.

June, in the year 1884, is known as the "Monomoscoy Bog," situated in the town of Marshpee. It contains five acres, and cost $1,870.00. The expense of the bog that year, including the weeding and care of it, the building of a bog-house, the gathering of the crop, besides tools bought for the use of the bog, and taxes, was $1,378.40; and a dividend was paid of $1,894.76, or 101 per cent. In the spring of 1885, 400 barrels of vines were sold from the bog, giving a net profit of $958.00, or more than half the first cost, and there were besides 200* barrels of cranberries on the bog at a low estimate.

* There were 232 barrels by actual count.

CHAPTER VII.

VARIETIES OF THE CRANBERRY.

The most desirable variety of cranberry to plant is the "Early Black." This is a very prolific and sure bearer, and the vines are not such rank growers as any of the other varieties. One advantage possessed by the "Early Black" over all others is, that a bog infested with worms, if found necessary, can be kept flowed until the fifteenth of June, and the berries will still have time to ripen by ths fifteenth of September. As intimated, the vine is of low growth, and the berries can be easier gathered. The "Early Black" is shown in the frontispiece, which was engraved from a photograph of the exact size, taken from some unusually fine specimens grown by the author.

Another very good variety is the "Second Early," which ripens about ten days after the "Early Black."

There are other varieties which bear still larger berries, but they do not keep well. Among these may be mentioned the "Macfarlane," a large berry, but it ripens too late, and must be picked green. This variety last season did not bring so much by one dollar per barrel as the "Early Black," which, with the "Second Early," are the only varieties that I consider it desirable to plant. I say this with great positiveness, as the result of long experience. A white frost will not seriously injure the "Early Black" cranberry, because the fruit is so nearly ripe before the frost appears that it will go through comparatively unharmed, where a later variety, being green, would be nearly destroyed if similarly exposed. The loss to the "Early Black," when nearly ripened and high colored, would be about one bushel in five hundred, whereas a green berry, under like conditions, would be ruined to the extent of three-quarters of the crop. Other varieties grown on the Cape, which I have not before mentioned,

are "The Howe," and "The Guild." The first may be described as "poor," the last as "fair." Neither is equal to the "Early Black," nor, in my opinion, is any better variety than this grown.

CHAPTER VIII.

INJURIOUS INSECTS AND WEEDS.

Weeds and bushes of all kinds should be kept out of the bog, and nothing but the cranberry vines allowed to grow there. Thorough and careful weeding is necessary in the Spring, after the water is let off; and in case any of the ditches need to be repaired, or cleaned out, it should be done at this time. Furthermore, in the Fall, after the crop is gathered, the bog should be weeded again, and then flooded, as heretofore stated, to prevent damage from the frost and sudden changes of temperature in winter.

THE FIRE-WORM.

The moth or miller which produces the Fire-worm, appears as early as the twentieth of June, and when flying looks about the size of a house fly. In about fifteen days after the miller deposits its eggs, generally on the under side of the leaves, the Fire-worm hatches out. It is absolutely necessary, if the bog is visited by this moth, to let water on the bog within twenty-four hours of its appearance, or the crop for the season will be destroyed. If the eggs are once deposited, water has no effect on them; but they will hatch out within fifteen days after the water is let off. I have seen the moths as late as the twentieth of June, and have known the worm to appear by July fourth. I have never seen a bog that was troubled with the Fire-

worm after being flowed continuously from the first of November to the first of June. This Fire-worm devours the parenchyma, or the green cellular tissue of the leaves, but does not attack the veins or ribs of their frame-work. The worm operates very much as does the Canker-worm upon the apple tree. The Fire-worm comes on when the fruit is forming, eating the vines, and destroying the buds and blossoms, thus ruining the prospect of a crop for the season.

THE FRUIT-WORM.

This insect eats more or less on all bogs, but at the worst has never been known to eat more than one-third of the crop. This worm bores into the heart of a fruit, eats out the inside, and then attacks another berry. It injures the fruit only when that is of the size of a marrowfat pea, but does not trouble the vines. Whenever a bog has been flowed late, or until June first, or fifteenth, it is very rare that the Fruit-worm does much damage, and the Fire-worm is effectually destroyed.

There are various speculations as to what moth produces the Fruit-worm, but there is no doubt as to what produces the Fire-worm. The Fruit-worm is the offspring of one of several moths or millers which are seen constantly flitting over the bogs from the middle of April until the first of June. This particular species appears when flying to be of the same size, and is nearly as dark colored as the house-fly, but at rest looks more like a mosquito.

GIRDLERS.

There are besides these, several kinds of Girdlers, that work underground and destroy the bark of the vines. They go quite around the stem of the plant, so completely eating off the bark that the sap cannot circulate, and the plant dies. If in such cases, the bog is young, and

without fruit on it, letting on the water would destroy the girdlers, and no damage would be done to the vines. One species of the girdlers is an inch long, and as big around as the common gray worm, which eats cucumbers, squashes, etc., in our gardens. They are rarely found where the bog is wet; but on high ground they sometimes do a great deal of damage. We see more of this insect while the plants are young and tender, than when they become old and woody.

Whenever there is fruit on the bog, it is dangerous to flow it in hot weather. Within my knowledge, several parties have lost their entire crop in consequence of flowing at this time. The berries were "scalded," that is to say, were softened and deprived of color, just as if they had been immersed in boiling hot water. In one instance within my knowledge, about three thousand barrels of fruit were lost by flowing in the summer time, to prevent the ravages of the Fruit-worm at a time when the berries were were nearly full-grown. This was on the Quoshnet Bog in Mashpee.

CHAPTER IX.

GATHERING AND SHIPPING THE CROP.

When the season for cranberry picking arrives, it is no unusual sight to see nearly the entire population of the village, from old to young, starting out in the morning on their way to the bogs. These people are packed into their farm wagons, which, holding anywhere from six to a dozen, and are drawn soberly along by the family horse, who apparently does not appreciate the situation as well as the good-humored crowd he is carrying. It is a sight which must be seen to be appreciated, as each individual

is dressed in a costume of startling originality and of the most unique description, the object being, not to see who can dress and look the best, but who can be the best protected in, and provided for the labor before them.

Upon arriving at the bog, each one has his or her name entered on an account-book by the overseer, and is given a pail, and a number by which the individual is to be known so long as the bearer remains, so that each one, upon coming up with a pail of berries to be emptied, calls out the number to the overseer, who places the proper credit against that number on his book.

The pickers commence work as soon as the dew is off of the bog, and work until noon, when they partake of a luncheon, usually brought with them ; and after a short rest resume work, and keep at it until night, when they return home as they came. They keep this up, going from bog to bog in the neighborhood, and picking while the season lasts. In some instances, pickers coming from a distance, will camp out in their tents, or erect rude dwellings, and live in them until the season is over.

To get the bog ready for the pickers, we first gather the fruit for about eighteen inches around the margin of the section where the pickers are to strike in, so that the berries will not be crushed when the men who measure and stretch the lines for the pickers go around. It is best to keep strings ahead over enough ground to accommodate a gang of one hundred pickers, so that no confusion or delay may occur in setting them to work. The strings are stretched across the sections in parallel lines, some six feet apart, and made fast to pegs set in the ground at each end. Betwen these lines, the pickers are set at work, from one to three in a row, whichever they prefer ; but no one is allowed to leave his place and go elsewhere, until his section is thoroughly and completely picked.

Pickers oftentimes come from sixty miles away, whole families of them, to the number of from one hundred

and fifty to two hundred pickers, and take the picking by contract. The berries are picked into six-quart pails, or measures, which are required to be heaped up to allow for the poor berries, the stems and leaves. Each picker, as has been stated, is allotted a number, and during the picking season, is designated, not by name, but by number. The pickers are usually paid ten cents per measure of six quarts; but in some places they are paid by the bushel; in such cases forty cents per bushel is the usual price. Sometimes pickers are paid by the pound. This is not usual, however. Each gang of fifty pickers, has an overseer, whose duty it is to see that the hands do their work well, pick clean, and do not tear the vines.

I have spoken of the account-book kept by the overseer; this book is made specially for cranberry growers, by stationers in Boston, Mass. It is a great convenience, and was first made at my suggestion. The book has an index of numbers upon its pages, of from one to two hundred, instead of being lettered from separately in an index, A to Z, as is usual. The book is about sixteen inches long, five inches wide, and is ruled in spaces of about fifty lines to the page. Every picker's name is written at the top of one of these pages, so that when a picker brings in a pail to be emptied, and calls out the number, the overseer, or account keeper, who is located at some convenient station on the bog, at a glance finds the number in the index, and turns to the page bearing that number, and gives the credit to the proper party, thus avoiding much delay, and lessening the liability to mistakes. A measure can be filled by a smart picker in fifteen minutes. A gang of eighty pickers (no unusual number), can in exceptionally good picking, pick five barrels, Massachusetts standard measure, in fifteen minutes, or twenty barrels an hour, at which rate there must be an average of a credit to be given the pickers by

the book-keeper every ten seconds. From this it will be seen that it takes a person of good ability, one who is quick and expert, to attend to the duties of accountant when the cranberry picking is lively.

Below is a *fac simile* of a portion of a page taken from one of my account-books, in the back of which it is my custom to have a number of blank leaves for other accounts.

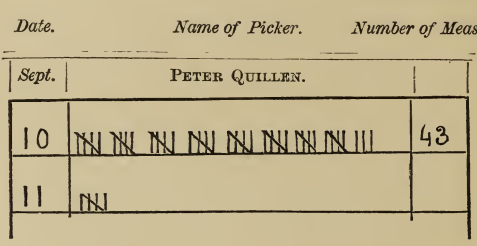


Fig. 11.—FAC SIMILE OF A PORTION OF A PAGE OF ACCOUNT BOOK.

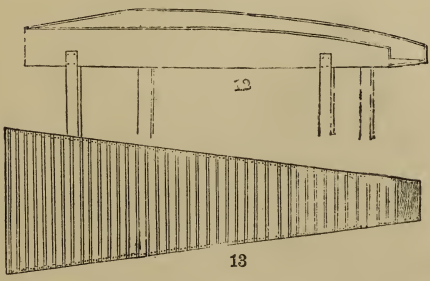
Each perpendicular mark represents a measure of six quarts. Four marks are thus set down; and, as every fifth measure is brought in, a diagonal line is drawn across the first four. The aggregate number of measures for each day's work is set down in the column ruled for the purpose at the right hand of the page. The date is kept in a similar column at the left hand, and the name of the picker is placed at the head of the page. When the week's work is done, the column of measures is reckoned up, multiplied by six, as each measure holds six quarts, and that again by the price paid, thus making a very simple and concise way of keeping accounts with the pickers.

The berries, as fast as brought in by the pickers, are thrown into crates, placed beside the accountant for that purpose. These crates, holding about one bushel each,

as fast as filled are carried off to be screened. Three crates at a time are carried on a sort of hurdle or hand-barrow, provided with handles at each end, and so constructed that the crates will fit nicely within it. Two men, one at each end, then take the load from the ground and hurry it away to the Bog-House.

THE SCREEN AND SCREENING.

The screening is done by either one person, working a small screen, or by several at a large one. One man is employed to attend strictly to this part of the business, under



Figs. 12 and 13.—CRANBERRY SCREEN AND VIEW OF BOTTOM.

whose direction all the screening and barrelling is done. The screen is in the shape of a flat-boat, with latticed bottom, through which the leaves, twigs, and small berries fall before reaching the end. A side view of the screen is given in fig. 12, and fig. 13 shows the bottom. The screen is mounted on legs long enough to bring it to a proper hight for the screeners who stand around it at their work. The slats are of the width of a common lath, make of good pine, planed smooth, and are nailed on with quarter-inch spaces between them. The screen slopes gradually from the widest to the narrowest end, or mouth,

under which is placed a barrel to receive the perfect berries. Some half a dozen people are allotted to each of the larger screens, with one at each end. A crate containing a bushel is dumped in at the large end of the screen, and the vines and poor berries thrown out, the white berries collected and put into separate pans, and the well colored fruit passes out at the smaller end, or mouth, into the barrel placed there to receive it. When the barrels are filled they are set at one side, and if required for immediate shipment the head, pressed down by means of a screw, is inserted, when the barrels are ready for the

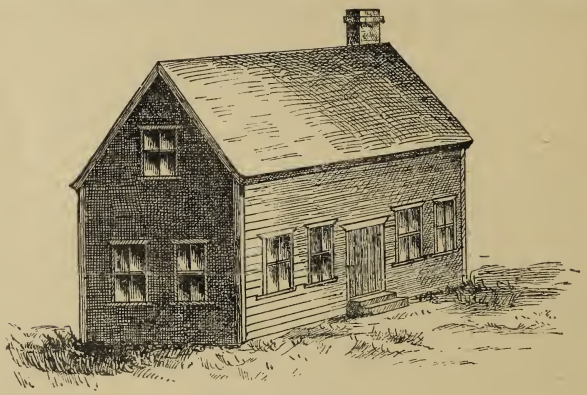


Fig. 14.—BOG-HOUSE.

teamster to take them to the depot. The berries are usually set in the Bog-House, or under canvass, for twenty-four hours before they are screened, in order to cool them thoroughly before barrelling.

THE BOG-HOUSE.

The buildings needed for the accommodation of the pickers and the fruit are: first, the Bog-House. The size of the house will of course depend upon the extent of the bog; one of ten or twelve acres would require a

house of about eighteen by thirty feet. Figure 14 gives a view of a Bog-House suitable for a twelve acre bog, which will accommodate thirty-two hands, or a sufficient number to take care of the bog in the picking season. The lower floor, a plan of which is given in figure 15, is

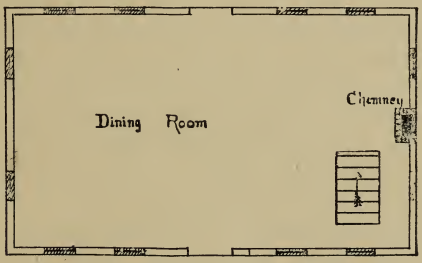


Fig. 15.—LOWER FLOOR OF BOG-HOUSE.

used as a cook room and as a room in which to dry the berries. The upper floor is arranged with sleeping accommodations, and is divided as shown in the plan, figure 16. Besides the Bog-House, there will be required sheds suitable for storing the crates in which the fruit is gathered, and also for sheltering the tools and barrels.

The berries when taken from the bog, should be set

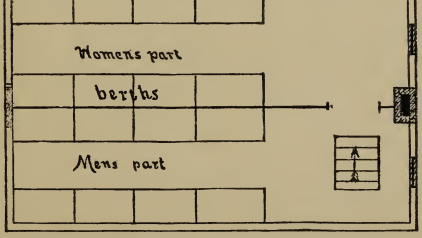


Fig. 16.—UPPER FLOOR OF BOG-HOUSE.

away in the Bog-House for a day or two before screening and barrelling, in order that they may be thoroughly dry, and keep better. If barrelled when wet, they will sweat

and decay. Berries barrelled in cold weather, in good condition, invariably keep better than those put up in warm weather. A great many growers do not think it profitable to keep berries for any length of time, as the extra price which may be obtained does not make good the loss from shrinkage. The most extensive growers ship their crop, so far as possible, as soon as it is gathered. A cool, dry place, and one where no frost can affect them is required for the storing of berries in the

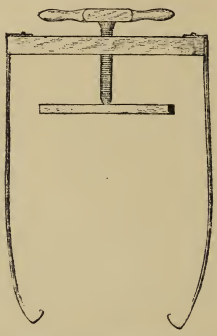


Fig. 17.—"HEADER" FOR BARRELING CRANBERRIES.

crates, and under such conditions they will keep for several months without damage. If kept until cold weather, they must be transferred to a cellar or barn where the frost can not penetrate. In preparing the barrels for shipment, after being well filled, the head is put in and pressed down to its place by means of the apparatus shown in figure 17. The hooks at the lower ends of the iron side-pieces catch under the bottom of the barrel, while the follower, by the working of the screw, presses the head of the barrel down into its place, where it is secured by the driving of the hoops.

CHAPTER X.

SOME STATISTICS OF CRANBERRY CULTURE.

Fifty barrels of cranberries per acre is a fair yield; but I have picked two hundred and nineteen barrels on two acres, besides the wasted and poor berries, and sixty barrels of fruit was left upon the bog. One barrel, one bushel and six quarts, or one barrel and one-third, has been picked from a single square rod.

The cost of picking the berries is from one dollar and sixty cents to two dollars per barrel of thirty-two quarts. The cost of screening is not less than twenty-five cents per barrel, on the average. The cost varies from fifteen cents to to one dollar and a half, according to condition. If perfectly sound, they can be run off for twenty-five cents, on the average. The cost of the barrels is forty-five cents each. The cost of getting the berries from the bogs to the railroad station would average about seventeen cents per barrel. The freight to Boston or Providence is twenty cents; to New York forty cents per barrel. The broker's commission for selling is five per cent. The average cost of taking care of a bog is ten dollars per acre, taxes included. The average cost of a barrel of cranberries is three dollars and seventy-five cents, including all expenses; so that, calling the original cost of a bog $425 per acre, and allowing that it produces fifty barrels per acre, at eleven dollars and fifty cents per barrel (last year's average price, delivered at the city), the profit per acre would be ninety-one per cent, or $387.50.

Below will be found appended the statistics of a few bogs that have come under my notice, and I will finish this treatise by inviting attention to the same.

THE SANTUIT BOG.

The Santuit bog, of about two and a half acres, on the margin of the Santuit Pond, cost $1,100 up to the time when it was seven years old; and when sold it had paid $2,500 above all expenses. It was sold for $2,500 without the crop, and I cleared $5,000 by the operation. This was my first venture. The bog was made in 1877 and sold in 1884.

THE MINOMOSCOG BOG.

This bog of five acres, cost $1,870. The Bog-house cost $250; screens, etc., $300. It paid last year a dividend of 101 per cent. We received for vines this spring $758, We have at a low estimate 200 barrels of berries on the bog, worth $1,500 at least.

THE JEHU'S POND BOG.

This bog contains six and three-fourth acres, and cost $375 per acre. In its third summer's growth, fifty-two barrels were picked, which sold for twelve dollars and fifty cents and thirteen dollars per barrel, and it paid nearly fifteen per cent on its first cost. The past year, 1885, was its year for bearing, and we gathered 563 barrels, with the probability that the bog will pay sixty per cent. this year.

THE WINSLOW BOG.

This is near Cotuit, of nine acres, costing $3,600. It paid dividends, amounting to $14,100 in eight years, from 1874 to 1882.

THE NEWTOWN CO.'S BOG.

This bog is sixteen acres in extent, and cost $6,800. It was made in 1864-65 and 1866, and actually paid between 1867 and 1882, upwards of $45,600. It was managed by Capt. Samuel Nickerson, of Cotuit. This bog, although now nearly twenty-one years old, looks almost as well as it ever did.

THE QUOSHNET BOG.

This paid thirty-five per cent last year, and left a balance in the treasury of $1,800. Some of the buildings having burned down, this fund was reserved for the purpose of rebuilding them.

A little four-acre piece, costing $2,000, in 1882 paid a dividend of $2,300, or 115 per cent.

Scores of cases could be cited of good paying bogs. One gentleman, heavily interested in bogs in Carver and elsewhere, had a two-year old piece in Carver that paid twenty-five per cent, and another that paid him 230 per cent in one year. This gentleman is well known, of undoubted veracity, and his name can be given to anyone who desires.

I will close the list by adducing one further instance, of which I am personally cognizant, namely:

THE ABAGAIL'S BROOK BOG.

This is a bog of eleven and three-fourths acres. The following are the figures for 1884.

The receipts for 1884 were, gross	$5,485.24
Expenses	1,973.87
Dividend	$3,511.37

Paid seventy-two per cent of its cost. Number of barrels picked, 509.

EXPENSES IN DETAIL.

Cost of weeding, digging canal and repairs to dam.	$322.50
Town of Mashpee tax	72.00
Chas. L. Baxter, 200 boxes @ 26¼c per 100	53.00
Do. 509 bbls @ 45	229.05
Carting 509 bbls. to depot	84.83
Cost of picking	831.94
" " screening	118.63
Workmen's time during picking and screening	183.72
Nails	1.20
Use of horse, 11 days @ $2.00 per day	22.00
Writing account	5.00
Care during the year	50.00
Total	$1973.87

CRANBERRIES UPON HIGH GROUND.

I am here reminded of a newspaper article, whioh recently came under my observation concerning a western plantation situated in Wisconsin. The correspondent, in speaking of it, states that, "in exact antipodes with common cranberry culture, this same plantation of some twelve acres, is situated on the highest land, and not in a low swampy marsh. Ditches of about two feet in width and half as deep are dug around each bed or plat, the plats being nearly level, and ridges are thrown up to separate the plats. Water is conducted into these ditches from a little mountain stream, dammed up for the purpose; just enough fall is allowed to make a slight current in the ditches, and at the lower corner of each plat, the water is conducted through the ridges in a flume to the next bed or plat, and so on down over the whole plantation.

"The soil is mostly white sand, and thin grass is allowed to grow up among the plants without in any way interfering with the crop.

"The proprietor informed us that he expected to pick 1,500 bushels this year from his plantation, which would bring from three to four dollars per bushel.

"It is a curious fact that this is the only known cranberry plantation of its kind in the world, but it has proved a grand success to its owner in a financial sense, and is well worth a long trip to see."

From the above statement, however, I can see no special inducement to abandon the well settled principle of making bogs on good, healthy swamps, with plenty of mud for a foundation—nor do I approve of letting grass grow up among the plants, albeit it may be without injury to them. I will surely say, that such has not been my experience, and I believe in keeping the hay crop and and the cranberry crop separate. In the light of the

facts and figures which I have already presented, there appears to be no special inducement, for the present at least, to ascend unto the mountain tops, and blast out the rocks, for the purpose of making a cranberry bed, and plant vines in the gravel, while we can do tolerably well with them in a good, soft foundation nearer home.

To offset this Wisconsin story, it may not be out of place to state that a celebrated grower in the Cape informed the writer a short time ago, that he had a piece of bog on the Cape, which in 1884, paid him 237½ per cent; but the yield in this latter case must be regarded as exceptional. Nor would I have it understood that such cases as I have cited above are the invariable rule. It depends on the season, and on the care given the bog. Sometimes the season is poor; frosts or insects get the best of the grower, and the bog does not "pan out" as well as the owner could wish, or expect. But, taking one year with another, and under good management, the money put into cranberry bogs may be considered a tolerably safe investment. The market is not overstocked; only a limited area of this country, so far as known, is suitable for the production of cranberries of superior excellence; and the exportation will be every year on the increase. With these facts to enlighten us, we may go on for an indefinite period, or until all the available bog is taken up, with the assurance that the market will expand as fast as the production increases.

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